Amendments to the Claims

1. (currently amended) The use of a linear peptide coupled to an active substance for diagnosis or therapy of a disorder affecting the CNS for the preparation of a medicine capable of passing through the hemato-encephalic barrier to be used for diagnosis or therapy of a disorder localized in the CNS, the said peptide satisfying one of the following ~~formulas~~ formula ~~(I),~~ (II) ~~or (III)~~:

~~X_1-X_2-X_3-X_4-X_5-X_6-X_7-X_8-X_9-X_{10}-X_{11}-X_{12}-X_{13}-X_{14}-X_{15}-X_{16} (I)~~

~~In formula (I), the residues X_1 to X_{16} are residues of amino acids, in which 6 to 10 of them are hydrophobic amino acids and X_6 is tryptophan,~~

BXXBXXXXBBBXXXXXXB (II),

wherein

~~BXXXBXXXBXXXXBBXB (III),~~

~~In formulas (II) and (III)~~:

– groups B may be identical or different, and represent an amino acid residue for which the side chain carries a basic group, and

- groups X may be identical or different, and represent a residue of aliphatic or aromatic amino acid, or

the said peptides ~~with formulas~~ of formula ~~(I),~~ (II)~~, (III)~~ in retro form, composed of amino acids with a D and/or L configuration, or a moiety of these acids composed of a sequence of at least 5 and preferably at least 7 successive amino acids of peptides ~~with formulas~~ of formula ~~(I),~~ (II) ~~or (III)~~.

2. (withdrawn) Use according to claim 1, characterized in that in peptides with formula type (I), the hydrophobic amino acids are alanine, valine, leucine, isoleucine, proline, phenylalanine, tryptophan, tyrosine and methionine, and the other amino acids are:

– non-hydrophobic, possibly non-polar amino acids such as glycine, or polar such as serine, threonine, cysteine,

asparagine, glutamine, or

– acid (aspartic or glutamic acid), or

– basic (lysine, arginine or histidine), or

– an association of amino acids in these three categories.

3. (withdrawn) Use according to one of claims 1 or 2, characterized in that the formula (I) type peptide includes 6 hydrophobic amino acids and 10 non-hydrophobic amino acids.

4. (currently amended) Use according to claim 1, characterized in that in the peptides in formula ~~types~~ type (II) ~~and (III)~~:

– B is chosen among arginine, lysine, diaminoacetic acid, diaminobutyric acid, diaminopropionic acid, ornithine and

– X is chosen among glycine, alanine, valine, norleucine, isoleucine, leucine, cysteine, cysteine^{Acm}, penicillamine, methionine, serine, threonine, asparagine, glutamine, phenylalanine, histidine, tryptophan, tyrosine, proline, Abu, carboxylic amino-1–cyclohexane acid, Aib, carboxylic 2–aminotetraline, 4–bromophenylalanine, tert–Leucine, 4 – chlorophenylalanine, beta–cyclohexylalanine, 3, 4–dichlorophenylalanine, 4–fluorophenylalanine, homoleucine, beta–homoleucine, homophenylalanine, 4–methylphenylalanine, 1–naphthylalanine, 2–naphthylalanine, 4–nitrophenylalanine, 3-nitrotyrosine, norvaline, phenylglycine, 3–pyridylalanine and [2-thienyl]alanine.

5. (withdrawn) The use of compounds according to the formula (IV) below:

A $(-)_m$ $(B)_n$ (IV)

where

– A is a peptide as described above in one of claims 1 to 4,

– B is a substance active in diagnosis or therapy for a disorder of the CNS,

– n is 1 or more, and preferably up to 10, and advantageously up to 5,

– $(-)_m$ represents the linker between A and B, where m is 1 or more, and preferably up to 10 and advantageously up to 5,

for the preparation of a medicine capable of passing through the hemato–encephalic barrier to be used in diagnosis or therapy for a disorder localized in the CNS.

6. (withdrawn) Use according to claim 5, characterized in that in formula (IV), the $(-)_m$ linker between A and B is a covalent, hydrophobic or ionic linker, cleavable or non–cleavable in physiological media or inside the cells, or a mixture thereof.

7. (withdrawn) Use according to claim 5, for the preparation of a medicine intended for the treatment or prevention of brain cancers, Alzheimer's disease, Parkinson's disease, depression, pain, meningitis.

8. (withdrawn) Use according to claim 6, for the preparation of a medicine intended for the treatment or prevention of brain cancers, Alzheimer disease, Parkinson's disease, depression, pain, meningitis.

9. (new) A method for diagnosis of a Central Nervous System (CNS) disease, comprising administering to a patient a conjugate comprising an active substance for diagnosis of a disease of the CNS coupled directly or indirectly by a covalent bond to one of the following peptides: SynB1 or SynB3.

10. (new) A method for treatment of a Central Nervous System (CNS) disease, comprising administering to a patient a conjugate comprising an active substance for treatment of a disease of the CNS coupled directly or indirectly by a covalent bond to one of the following peptides: SynB1 or SynB3.

11. (new) A method for driving a substance across the Blood Brain Barrier (BBB) to the Central Nervous System (CNS), comprising:

preparing a conjugate comprising an active substance coupled directly or indirectly by a covalent bond to one of the following peptides: SynB1 or SynB3; and

administering said conjugate to a patient.